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WHO JOINS 4-H CLUBS?
Part 2

UNIVERSITY OF WISCONSIN MADISON

Contents

Foreword

This study began in 1949 with the cooperation of county superintendents, administrators, county extension agents, teachers, parents, and students of the schools in the 10 communities studied. Financial aid and graduate student assistance on the research came from several sources, including the Graduate School, Department of Education, Department of Agricultural and Extension Education, Cooperative Extension Service, and the Numerical Anaylsis Laboratory of the University of Wisconsin. The World Book Company, the Personnel Press, the California Test Bureau, and the Educational Testing Service have made tests available at less than retail cost as a means of encouraging this project. The Cooperative Research Program of the Office of Education, U.S. Department of Health, Education and Welfare has helped finance the program since 1958.

The data gathered in this project are so extensive that only the hypotheses of pressing immediate concern have been tested. Considerable data in the initial study remain to be summarized and reported. Analysis of data in a replication begun in 1954-55 will be completed and compared with the initial findings.

Extensive longitudinal data available permit investigation of special problems not planned for in the initial design. This is true of the 4-H Club aspects of this total investigation.

WHO JOINS 4-H CLUBS ?—Part 2

An Analysis of Members, Drop Outs and Non-Members on Personal and Social Behavior, School Achievement and Socio-Economic Factors[1]

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Summary

Introduction

This study compares some behavioral and background aspects of 4-H and non-4-H members under 3 distinct categories. These categories are: (a) personal and social behavior, (b) school achievement, and (c) socio-economic status. Data were available for grades 1, 6, 9, and 12. This report is a composite of 6 parts of a continuing longitudinal study which were undertaken by graduate students as theses research. (See the Bibliography for further details.)

Personal and Social Behavior

Enhanced personal development is one of the objectives of 4-H Club work, and improved social behavior is an expected outcome of participation. This study focused on 5 items of personal behavior as developed in the California Test of Personality—Community Relations, Feeling of Belonging, Sense of Personal Worth, Social Skills and Social Standards. The instrument was administered at grades 1, 6, 9, and 12. Another perspective was available through the sixth grade teacher's rating of the child's emotional stability, social qualities, and home opportunities.

The sixth grade 4-H girls did seem more mature in sense of personal worth, self-confidence and emotional stability compared with non-4-H members. The teacher rating on child's emotional stability and social qualities supported this finding. At this point in their development they had, however, been 4-H members for only 1 year. When these young people were tested at ninth grade and again at twelfth grade, the difference between 4-H and non-4-H members had disappeared. Minor differences which did appear between 4-H and non-4-H

[1] The research reported herein was supported through the Cooperative Research Program of the Office of Education, U.S. Department of Health, Education, and Welfare.

members were as likely to favor non-4-H members as members.

Data for boys and girls were treated separately. The mean scores of girls were higher than those of boys on all personal and social behavior factors except community relations.

Earlier studies had indicated that I.Q., student achievement, organizational affiliation, and social status of parents may operate as selective factors in determining who joins 4-H Clubs. Provision was made in the present research design to comprehensively control these factors in one of the studies included in this report. The subjects were ninth grade 4-H and non-4-H boys and girls. There were significant differences between 4-H and non-4-H girls on only 2 variables—feeling of belonging and social skills. The differences favored the 4-H girls on feeling of belonging and the non-4-H girls on social skills. There were no significant differences between 4-H and non-4-H boys, but the higher mean scores tended to favor the non-4-H boys. This finding at ninth grade in a rigorously controlled situation is a verification of the tentative conclusion that at sixth grade 4-H members did not manifest superior personal growth, when compared with non-4-H members.

Another of the studies compared 3 groups of ninth grade girls classified as (a) non-4-H members, (b) drop-outs, and (c) 4-H members with 4 years in 4-H Club work. In this situation there were no significant differences among these groups on feeling of belonging, sense of personal worth or social skills. These findings do not support the widely held belief that 4-H members are superior to non-4-H members in personal attributes as an outcome of their 4-H Club experience.

School Achievement

Two of the studies analyzed selected groups within the main study on their school achievement. The first of these involved the 3 groups of grade 9 girls identified in the preceding paragraph. There was no significant difference among these 3 groups on 9 of the school subjects tested. For total English score and mental age, statistical differences favored the 4-H girls.

A second analysis involved school achievement data for 4-H Club members at grades 1, 6, and 9 when compared on the basis of kinds, numbers, and progression of 4-H projects. The boys were compared on the basis of 5 projects—dairy, electrical, garden, sheep, and woodworking—and the girls on 3—clothing, food, and livestock projects.

There were no significant differences among the boys' groups in the mean scores for the Chicago Reading Test, Kuhlmann-Anderson Mental Age, or Metropolitan Achievement Test. The high mean scores for these tests were distributed at grade 1 among dairy, garden, and sheep project members; at grade 6 between garden and electrical project members; and at grade 9 among sheep, garden, and woodworking project members.

The differences for achievement test scores among the girls were small when compared on the kinds of 4-H projects taken. The girls taking the livestock projects had the lowest scores for Chicago Reading Test at grades 1 and 6 and the Kuhlmann-Anderson Mental Age at grade 1. At grade 6 the livestock project girls had the second highest score for this test.

The girls in livestock projects had low scores at grades 1 and 6 for Metropolitan Achievement Tests, but achieved second place at grade 9. The girls enrolled in the clothing project achieved the highest score in the standardized tests in all 3 grades, with the exception of the Metropolitan Test at grade 6, where the food project members attained the highest score. The difference between clothing and livestock project members was small and tended to decrease as the grade level advanced.

The latent difference existing between the performance of boys and girls was again apparent in the results of analysis of data from the standardized tests. There was a total difference of 40 mean

score points for the boys and 24 mean score points for the girls. In only 2 instances did the *highest* mean score for any of the boys' tests exceed the lowest mean score for the girls' tests.

The 4-H members were next compared on the basis of the different total numbers of 4-H projects taken during their tenure as 4-H members. The scores for all 3 standardized tests at grades 1, 6, and 9 fluctuated among those boys taking 1 project to those taking 10-12 projects. There was a significant difference at the .05 level among boys at grade 6 for the Kuhlmann-Anderson Mental Age Test. Boys taking 10-12 projects had the highest score and those taking 2 projects had the lowest score. Those boys who took 10-12 projects achieved the highest mean score for these tests in 7 out of 8 comparisons. Furthermore, those taking the greatest number of projects—13 and above—tended to score lower than boys carrying 10-12 projects. When compared on the basis of numbers of 4-H projects taken, girls differed similarly but not so markedly. The girls' 3 scores were generally higher than the boys' 3 scores but there were a few more instances of overlapping values than appeared among members compared by kinds of projects.

The 4-H members were studied further on the basis of level of progression attained in 4-H projects. Members were categorized at 4 levels of progression: (1) those showing no progression but with potential, (2) those with some progression but less than half of potential, (3) those with over half but less than total, and (4) those reaching maximum progression.

The analysis of data for boys compared on this basis supported the finding emerging from analysis of school achievement, when they were compared on numbers of projects taken. Those boys attaining maximum progression achieved the lowest scores for all the tests at grades 1, 6, and 9. In addition, there was a significant difference at grade 1 among the mean scores for the Chicago Reading Test and the Metropolitan Achievement Test. The highest score was achieved by those attaining over half but less than total maximum progression, and the lowest score by those with maximum progression. The outcomes concerning these 2 categories of progression in 4-H projects corresponded to the 2 categories and the outcomes of the analysis on numbers of 4-H projects taken.

When compared on the basis of 4-H project progression, the girls paralleled the boys' tendency once. The mean scores on the Kuhlmann-Anderson Mental Age Test at grades 1, 6, and 9 for those girls attaining maximum progression fell below scores for those girls classed as "over half but less than total" on progression. The low mean in 6 of the 8 tests was scored by those girls attaining some progression, but less than half of potential.

Socio-Economic Factors

Socio-economic factors studied in the data for both 4-H and non-4-H members included number of cows and size of farm, socio-economic status, and occupation of father.

There were no significant differences for number of children in the family, when 4-H members were compared on the basis of age at joining 4-H or membership tenure in 4-H. When members were compared at grades 1 and 6 on the basis of kinds of 4-H projects taken, there was a significant difference among the boys at grade 6. The boys at grade 1 and 6 who took the sheep project came from families having more children than did boys taking dairy, electrical, garden, or woodworking projects. There were no statistical differences for girls or boys for number of children in the family, when studied on the basis of numbers and progression of 4-H projects.

According to the questionnaire filled out by parents at grades 1 and 6, the greatest number of cows was owned by families whose boys took the dairy projects. The difference was statistically significant at grade 1. The differences were not significant at grade 1 among

the girls, but those girls who took the livestock project had a significantly higher mean score at grade 6 on the number of cows owned by their family.

The number of organizations to which parents belong may be a conditioning influence in 4-H Club participation. Parents of girls who stayed in 4-H Club work longest belonged to significantly more organizations than did the parents of those girls who were early drop-outs.

The parents of boys carrying dairy projects belonged to more organizations than did parents of electrical, garden, sheep and woodworking members, but the difference was not significant. Among the 4-H girls, there was a significant difference at grade 1, but not at grade 6, when the number of organizations to which parents belong was categorized by kinds of project. The girls who took the livestock project had the highest mean score for this factor at both grades.

Parents of boys taking a large number of projects belonged to the most organizations. Parents of boys taking the least number of projects belonged to the smallest number of organizations. The differences were significant for boys at both grades 1 and 6. It was significant again at grade 6 for those boys who attained over half progression but less than total. No significant differences occurred among girls on these factors.

The Sewell Scale (short form) was used to measure the socio-economic status of the families at both first and sixth grade. When 4-H members were compared with non-4-H members, there was a statistically significant difference at the .05 level among the boys in favor of the 4-H boys.

Late joiners among both boys and girls had lower socio-economic status scores. The differences were not significant for girls, but among the boys, those who stayed in club work the longest had significantly higher scores.

When socio-economic status scores were compared on the basis of kinds of 4-H projects taken, the dairy and woodworking project members ranked highest among the boys and the livestock project members had the higher mean score among the girls. However, the differences were not significant.

Among both boys and girls, those members who took the greatest number of projects had the higher socio-economic status scores. Those who attained the most progression in 4-H projects also had a higher score. Only in the case of the number of projects carried by boys was the difference significant. The highest score was achieved by those carrying the most projects and this significance was on the Sewell score when the boys were in grade 1. It was no longer significant at grade 6.

Other socio-economic factors were considered in the study as part of the family background data. For instance, children of Lutheran parents joined at a significantly younger age than did members with Roman Catholic parents.

The number of organizations to which parents belong is one aspect of socio-economic status. Boys whose parents belonged to more organizations joined younger, but not significantly at that point. However, by ninth grade among boys who had 4 years or more of 4-H Club work, parents belonged to a significantly greater number of organizations. There were no such distinctions among the girls, when compared on age of joining and persistence in 4-H membership.

The 4-H members were compared on the basis of kinds, numbers, and progression of 4-H projects. The boys who took electrical and sheep projects had parents who belonged to the fewest organizations at grades 1 and 6. Boys taking dairy and woodworking projects had parents who belonged to the most organizations, but for boys no differences were significant. Parents of girls who took the livestock projects belonged to significantly more organizations when their daughters were in grade 1. However, this factor was no longer significant at grade 6.

The boys at grade 1 who later took 7-9 projects had parents who belonged to significantly more organizations and at grade 6 the parents of boys taking 13

projects and over belonged to significantly more organizations. The parents of girls who took 3 projects belonged to the fewest organizations at both grades 1 and 6, but the differences were not large enough to be significant.

When boys were compared on the basis of project progression, those who attained over half but less than maximum had parents who belonged to a significantly greater number of organizations. Girls showed the same tendency at grade 6, but no significant differences were found.

Implications

If the general objectives of the 4-H program were being achieved in the study communities, one would anticipate significant differences between 4-H members and non-4-H members in terms of their personal and social growth. No such differences were found. This means that 4-H'ers did not feel any more worthy of being regarded, believed, or appreciated than did others. They did not believe that they enjoyed the love of their families and cordial association with people in general to a greater degree than did non-members. Four-H members did not respect the rights of others more completely nor subordinate their wishes in the interests of the group to a greater extent. They did not show a greater liking for people and were no more diplomatic in their approach to social situations. They did not aspire for the welfare of the community more than non-members.

If any consistency at all can be described, then the results which favored 4-H girls over non-4-H girls, and favored non-4-H boys over 4-H boys in personal and social behavior, would indicate that the girls' program appeared to be meeting its objectives more effectively than did the boys'. Yet the small and varied differences that appeared strongly spelled no difference.

This development may have arisen because the 4-H program was not sufficiently strong to influence those members with 4-5 years of 4-H experience in achieving the high standards of the 4-H program. This conclusion coincides with the earlier study which revealed that some members thought the 4-H program was weak.[2] It should be cause for concern that the boys who made the maximum project progression and who took the most projects were among those in the lowest mean achievement category. This may bode ill for the future leadership of farm groups if they recruit from the most active and persistent former 4-H member. It also leads one to question whether award winners in the 4-H program are successful because they out-last rather than out-win their competitors, who have probably dropped out of 4-H Clubs at an earlier date. The assumption that 4-H Club programs are adequately meeting their objectives can no longer go unquestioned.

The full implications and impact of this longitudinal study of 4-H Club work is yet to be felt. These findings need to be considered carefully by professional 4-H Club staffs, by local leaders, and by donors. The findings may lead to changes in the 4-H Club program and to new research. Both are needed. Those who wish to pursue the implications of this study in depth should obtain a copy of the first report which identifies the questions, readings, and resolutions.

[2] For a review of studies conducted by other researchers, the reader is referred to the first publication in this series: Burton W. Kreitlow, Lowell Pierce, Curtis Middleton, *Who Joins 4-H Clubs,* Research Bulletin 215, University of Wisconsin, Madison, October 1959.

Purpose and Background

Research on the characteristics of the 4-H Club member is being conducted at the University of Wisconsin as part of the Longitudinal Study of School District Reorganization and an initial report has already been published.[3] This second report is a compilation of further analysis and findings of this study involving a beginning group of 700 boys and girls. The previous report used data which were available for this group up to grade 6; the present report deals with some different aspects of the study and uses data pertaining to grades 1, 6, 9, and 12. Both reports are now considered part of the "Wisconsin Longitudinal Study of 4-H Club Work."

The research reveals differences in academic achievement and personal background of members and non-members. Such intimate knowledge of the boy and girl can guide those engaged in the development of the 4-H Club program.

Data for boys and girls were kept separate throughout the study as their patterns of behavior were quite different. For instance, the mean score for achievement and other factors was usually higher for girls than for boys because girls mature at a faster rate than boys.

Previous Findings of This Study

Initial research on the 4-H Club members and non-members who are continuing study subjects in the "Wisconsin Longitudinal Study of 4-H Club Work" showed real differences between them. The differences measured pertain to mental ability, school achievement, willingness to work, and certain factors in their home and family background. Four-H members ranked higher than non-members on these items at sixth grade. On many of these items the 4-H Club boys and girls ranked higher when they were in grade 1, thus identifying selectivity of membership, rather than achievement during the tenure of membership, as the important factor.

The study subjects were divided into the following 3 groups for analyses: (a) 4-H members, (b) drop-outs from 4-H, (c) non-4-H members.

A summary of responses of these groups to questions about club work indicates that members value learning opportunities most. Members and drop-outs expressed a wide variety of ideas for improving the 4-H program. Twenty per cent of the non-members gave lack of interest as the reason for not joining. Non-members most frequently cited lack of local units as their main reason for not joining. This reason was also given by many drop-outs as their reason for leaving 4-H Club work. Drop-outs also described the 4-H program as "weak."

These early findings already reported (which showed selectivity to be more important than achievement) were somewhat unexpected. As a result of these data, the local 4-H Club leaders and the professional 4-H Club staff in county and state cooperative extension services began to reconsider many of the assumptions long held about the outcomes of 4-H Club work. The 4-fold development of the individual noted in the 4-H objectives includes the enhanced personal growth of the member and the development of his intellect. Until recently almost everyone associated with 4-H Club work believed these objectives were being met. The early findings of this study have encouraged a new look at the outcomes of 4-H Club work.

[3] Burton W. Kreitlow, Lowell Pierce, Curtis Middleton, *Who Joins 4-H Clubs?* Research Bulletin 215, University of Wisconsin, Madison, October 1959.

Sources of Data

Many of the data used in this study were obtained when information was collected for the initial longitudinal study of school district reorganization. Two instruments were added to the original battery of data-gathering devices. These provided explicit information on 4-H, which was incorporated with available data to provide another dimension of knowledge on students who are also 4-H Club members.

These new instruments were the Activity Questionnaire, which was administered at grades 6, 9, and 12, and the 4-H Project Record Survey, which was administered at grade 12. The Wisconsin State 4-H Club staff was consulted during the formulation of both of these instruments.

Design of the Study

The basic schematic design of the study for which these data were collected is described in the previous report. The data were collected over a period of years. The students in the 4-H sample became study subjects in grade 1. They are being examined again in grades 6, 9, 12, and again 5 years after high school graduation. These same students are subjects of the companion school reorganization study. A replication study began when the first students reached grade 6.

At the time of the first testing in grade 1, the student is about 6 years old; during the second time of study he is about 12, the third time about 15, the fourth time about 18, and the fifth time he will be about 23.

Six of the 10 communities included in the investigation are rural, with a village center, a farm service area and little, if any, direct influence of cities. Four of the communities, although basically rural, are influenced by nearby urban developments to the extent of providing homes for some new commuters and urban jobs for some of the long time residents.

The 4-H Club program in the counties, of which the communities are a part, has been shown to be representative of the 4-H Club program in Wisconsin and relates to the objectives of 4-H Club work in the state.

The present report presents the findings from the testing of hypotheses relating to personal and social behavior, school achievement of 4-H and non-4-H members, age at joining, membership tenure and educational and socio-economic backgrounds of 4-H members.

Hypotheses on Personal and Social Behavior Factors:

1. There is no difference in personal and social behavior at sixth grade between 4-H and non-4-H boys, or between 4-H and non-4-H girls.

2. There is no difference in personal and social behavior at ninth grade between 4-H and non-4-H boys, or 4-H and non-4-H girls when I.Q., organizational affiliation, school achievement, and socio-economic status are controlled.

3. There is no difference in personal and social behavior among ninth grade girls with 4 years and over of 4-H experience, 1 or 2 years of 4-H experience, and no 4-H experience.

4. There is no difference in the personal and social behavior at grades 6, 9, and 12 among 4-H members, 4-H drop-outs and non-4-H members.

5. There is no difference in personal and social behavior at grades 1 and 6 among 4-H boys or among 4-H girls when compared on kinds, numbers and progression of 4-H projects taken during 4-H Club membership tenure.

Following is a list of personal and social behavior variables used in the more detailed analysis. Data were examined on variables a,b,c,d,e,f, and h

for Hypotheses 1 and 2 and on variables b,c,d,f,g,h,i and j for Hypothesis 3, on variables a,b,c,d, and e for Hypothesis 4, and on i for Hypothesis 5.

(a) Community Relations
(b) Feeling of Belonging
(c) Sense of Personal Worth
(d) Social Skills
(e) Social Standards
(f) Teacher's Rating on Child's Emotinoal Stability
(g) Teacher's Rating on Child's Home Opportunities
(h) Teacher's Rating on Child's Social Qualities
(i) Teacher's Rating on Child's Willingness to Work, and
(j) Teacher's Rating on Family's Family Background

School Achievement Factors

6. There is no difference in school achievement among ninth grade girls with 4 years and over of 4-H experience, 1 and 2 years of 4-H experience, and no 4-H experience.

Data were examined on the following variables for Hypothesis 6:

(a) Arithmetic
(b) Arithmetic Problems
(c) History
(d) Geography
(e) Literature
(f) Reading
(g) Spelling
(h) Vocabulary
(i) Total English
(j) Science
(k) Total School Achievement, and
(l) Mental Age

7. There is no difference in school achievement at grades 1, 6, or 9 among 4-H boys or among 4-H girls when compared on kinds, numbers and progression of 4-H projects taken during 4-H membership tenure.
Data were examined on the following variables for Hypothesis 7:

(a) Chicago Reading Test, grades 1 and 6
(b) Kuhlmann-Anderson Intelligence Test, grades 1, 6, and 9, and
(c) Metropolitan Achievement Test, grades 1, 6, and 9

Socio-Economic Background Factors

8. There is no difference in socio-economic status at sixth grade between 4-H and non-4-H boys, or 4-H and non 4-H girls.

9. There is no difference in socio-economic background among ninth grade boys or girls who joined 4-H under 10.5 years of age, 10.5 to 11.5 years of age, or at ages older than 11.5 years.

10. There is no difference in socio-economic background among ninth grade boys or girls who joined 4-H Clubs for 1 year and dropped out, joined for 2 or 3 years and dropped out, or who have been in 4-H Club work for 4 or more years.

11. There is no difference in the socio-economic background at grades 1 or 6 of boys or girls when compared on the kinds, numbers and progression of 4-H Club projects taken during 4-H membership tenure.

Data were examined on the following variables for Hypotheses 9, 10, and 11:

(a) Number of Children in the Family
(b) Number of Cows Owned
(c) Number of Organizations to Which Parents Belong
(d) Occupation of Father
(e) Sewell Socio-Economic Score, and
(f) Size of Farm

In addition, they were analyzed for g and h for Hypothesis 10 and g for Hypothesis 11.

(g) Teacher Rating on Family Background
(h) Family's Educational Status, and
(i) Family's Financial Status

Study Samples

All of the study samples are from the longitudinal study of 4-H Club work. This report is a composite of 6 theses by graduate students. The number of cases in the sample will vary among the

hypotheses because of the different control factors imposed on the data. Those students listed as members are members at the grade level noted, those listed as non-members never have been members and those listed as drop-outs are not members at the grade level noted but had been at an earlier date.

Hypotheses 1 and 8 were tested by analyzing data from a total of 70 4-H boys and 78 4-H girls from the 10 study communities who were in sixth grade (1954-1957).

Hypothesis 2 focused on all 383 ninth grade boys and girls. This total was divided into 2 parts, those who had 4-H experience and those who had none. Of those boys and girls with 4-H experience, only those who had belonged 4 years or more were retained in the sample to test this hypothesis. The 4-H boys were matched with the non-4-H boys and the 4-H girls were matched with the non-4-H girls. Four factors were controlled for each group. These factors were intelligence, organizational affiliation, school achievement, and socio-economic status. Each of these factors was further divided into low, medium, high, and the students were matched on this additional basis. The mean score minus one-third of the standard deviation was a low score; the mean score plus one-third of the standard deviation was a high score, and the remaining scores between the high and low scores were designated medium scores. On this basis 19 4-H girls were matched with 19 non-4-H girls, and 9 4-H boys were matched with 9 non-4-H boys controlling the 4 factors. An additional group of 18 4-H boys were matched with 18 non-4-H boys with only 3 factors controlled.

Hypotheses 3 and 6 tested data from 3 groups, each composed of 23 ninth grade girls: (a) girls with 4 years and over of 4-H experience, (b) girls with 2 or 3 years of 4-H experience, and (c) girls who had no 4-H experience, resulting in a total of 69 girls.

Hypothesis 4 dealt with a group of 30 boys and 30 girls at grades 6, 9, and 12 and tests data on their personal and social development.

Hypotheses 5, 7, 9, 10 and 11 focused on those boys and girls in the longitudinal study who were 4-H members.

Hypotheses 9 and 10 were tested by using a total of 92 4-H boys and 84 4-H girls who were categorized on the basis of membership status and age at joining.

Hypotheses 5, 7, and 11 involved 221 boys and girls who were identified as having 4-H Club experience sometime during their school years. In all, 142 boys and girls were included in the study on kinds, numbers and progression of 4-H projects. Seventy-nine students were eliminated from this sample because they failed to meet the criteria for this analysis which stipulated that there must be data available from first to ninth grade and that they must have enrolled in twelfth grade in 1 of the 10 communities in the study. The attrition of numbers of cases from 221 to 142 was attributed to school drop-outs and transfers-in and transfers-out of the school system after the grade 1 collection of data in the community. A total of 67 4-H girls and 75 4-H boys was involved in this part of the study.

Data Gathering Devices

Activity Questionnaire

This instrument required the student to answer questions about his club activities and his parents' interest in 4-H. It was administered at grades 6 and 9.

California Test of Personality

A modified form of the California Test of Personality was the main instrument used for collecting information on personal and social behavior. The test is considered useful for research, although it was initially developed as a learning device to promote a normal balance between personal and social adjustment. The California Test of Personality used in this study is divided into 5 sections—community relations, feeling of belonging, sense of personal worth, social skills, and social standards—in an effort to ascertain how individuals think, feel, and act in certain situations.

4-H Project Record Survey

An instrument was designed to record the kinds, numbers and levels of *progression* of 4-H projects throughout the entire club experience of the student. *Progression* refers to the ascent to more difficult levels of a project program. These records were provided by county extension agents.

Sewell Socio-Economic Scale

A short form of this questionnaire is administered to parents as a means of determining their socio-economic status.[4]

Three standard tests were used at grades 1 and 6 to measure school performance. They were: Chicago Reading Test, Kuhlmann-Anderson Intelligence Test, and the Metropolitan Achievement Test.

Two of these instruments were used at grade 9 — the Kuhlmann-Anderson Intelligence Test and the Metropolitan Achievement Test.

Teacher Rating Scale

The teachers at grade 1 and grade 6 were asked to rate the students on 6 child and 9 family traits. The ratings on the scale ran from 1 to 5. In most instances, the students were rated by a different teacher at grade 6 than at grade 1. Rarely had a teacher known a student less than 6 months when the rating was made and often she had known him and his family for years. Teachers had no notion that the students were being divided on the basis of 4-H Club experience.

[4] William H. Sewell, "A Short Form of the Family Socio-Economic Status Scale," *Rural Sociology* 8: 16: 1944.

Statistical Analysis

Five different types of statistical analysis were used in an effort to deal rigorously with a variety of data.

Hypotheses 1, 2, and 6 were tested by means of the Behrens-Fisher "d" Test and reference made to Sukhatme's Tables of Significance of the Difference between 2 means. Hypothesis 2 was also subjected to Multiple Regression Analysis.

Hypotheses 3 and 4, 5, 6, and 7 involved more than 2 groups and, therefore, entailed the use of Analysis of Variance to determine the difference among the different groups of means. Tukey's "W" Test was used to test those means between which differences were significant.

For Hypotheses 5, 7, 8, and 11, a one-way classification of Analysis of Variance was used as determined with Scheffé's Error Term. In addition, for Hypotheses 5, 7 and 11, Duncan's Multiple Range Test was applied when a significant F-ratio was found.

Results of Investigation: Personal and Social Behavior

Community Relations

The term, *community relations,* describes how an individual perceives his role in the community and his interaction with other community members. The analysis showed that the difference between sixth grade 4-H and non-4-H girls in terms of community relations was negligible but favored 4-H girls. There was a slight, but not significant difference between the 4-H and non-4-H boys which is in favor of 4-H boys. Therefore, the Hypothesis 1 (a) (that there is no difference in community relations scores between 4-H and non-4-H boys or between 4-H and non-4-H girls at sixth grade) was accepted. *Wherever a null hypothesis was accepted, and no significant difference was found, the objective of superior adjustment among 4-H members appeared not attained.*

At ninth grade there were no significant differences between the matched groups of 4-H and non-4-H boys and girls. Therefore, the Hypothesis 2 (a) that there is no difference in community relations scores between 4-H and non-4-H boys or between 4-H and non-4-H girls at ninth grade was accepted.

Four-H boys at grades 6 and 9 had higher mean scores in community relations than either 4-H drop-outs or non-members. At grade 12 the 4-H drop-outs excelled in community relations, followed by 4-H members, and finally non-members.

The 3 groups of girls had higher mean scores than the boys on community relations. Although little difference existed among the girls, the 4-H non-members excelled at grade 6, 4-H drop-outs excelled at grade 9, and 4-H members and non-4-H members shared the higher scores at grade 12. The differences were not significant, therefore Hypothesis 4 (a), that there is no difference in community relations among 4-H members, 4-H drop-outs, and non-4-H members at sixth, ninth, and twelfth grade, was accepted.

Feeling of Belonging

The concept of the feeling of belonging pertains to that integrative sense possessed by an individual who is functioning as a harmonious part of his family and community life. Table 1 shows that there was no difference in the mean scores on feeling of belonging for sixth grade boys and that the slight difference between 4-H and non-4-H girls was in favor of the 4-H girls, but the difference was not significant. Therefore, the Hypothesis 1 (b), that there is no difference in feeling of belonging between sixth grade 4-H and non-4-H boys or between 4-H and non-4-H girls, was accepted.

There was no difference in the mean scores of the ninth grade boys in either the group with 3 factors controlled or in the group with 4 factors controlled. The higher mean score for the ninth grade girls who were 4-H members did result in a significant difference at .05 level. Therefore, the Hypothesis 2(b), that there is no difference among ninth grade 4-H and non-4-H boys, was accepted, but the hypothesis for ninth grade girls was rejected.

An Analysis of Variance of mean scores for the feeling of belonging among the 3 groups of ninth grade girls revealed a small difference among the means, but the group of girls with 4 years of 4-H experience and over had the highest mean score, with the 1- and 2-year drop-outs coming next, and the non-4-H girls last. The F-value of 1.02 was not statistically significant. Therefore, Hypothesis 3 (b), that there is no difference in feeling of belonging among ninth grade girls with (a) 4 years and over of 4-H experience, (b) 1 and 2 years of 4-H experience and, (c) no 4-H experience, was accepted.

Table 1—The Mean Scores on Feeling of Belonging of Sixth and Ninth Grade 4-H and Non-4-H Boys and Girls in 10 Wisconsin Communities

Group	Grade	C F[a]	4-H Members Mean	4-H Members Number	Non-4-H Members Mean	Non-4-H Members Number	"d"	Higher Mean Score
1. Boys	6	0	10.2	70	10.2	225	.03	4-H
2. Girls	6	0	10.9	78	10.6	174	1.83	4-H
3. Boys	9	4	11.1	9	11.1	9	0	----
4. Boys	9	3	11.1	18	11.1	18	0	----
5. Girls	9	4	11.4	19	10.7	19	2.12	4-H[b]

[a] C F = Controlled Factors
[b] Significant at the .05 level

Among the boys the 4-H members had the high mean score on the feeling of belonging factor at grade 6, while the 4-H drop-outs had the high mean score at grades 9 and 12. Among the girls, the 4-H drop-outs had the high mean score at grades 6, 9, and 12. Differences among boys and among girls were very small and not significant.

With no significant differences at the .05 level, Hypothesis 4(b), that there is no difference in feeling of belonging among 4-H members, 4-H drop-outs, and non-4-H members at sixth, ninth or twelfth grade, was accepted.

Sense of Personal Worth

The sense of personal worth possessed by an individual relates to his feeling of self esteem, plus the esteem with which he perceives that others regard him. The analysis of data for this factor for 4-H and non-4-H members at sixth and ninth grade led to an acceptance of Hypotheses 1 (c), and 2 (c), that there is no significant difference between 4-H and non-4-H members in feeling of personal worth at sixth and ninth grades.

The slight difference in scores was in favor of 4-H members. There was no significant difference for the matched groups of boys or girls at ninth grade, but the differences between the 2 groups of 9 boys with 4 factors controlled and the 2 groups of 18 boys with 3 factors controlled, favored non-4-H members. The differences between the 2 groups of 19 girls with 4 factors controlled tended to favor the 4-H members. The differences are not significant.

The Analysis of Variance test was applied to the mean scores for sense of personal worth among ninth grade girls. There was little difference between the mean scores for this factor, the value of F was negligible and indicated that Hypothesis 3(c), that there is no difference between ninth grade girls with (a) 4 years and more 4-H experience, (b) 1 and 2 years 4-H experience, (c) no 4-H experience, was accepted.

Data for sense of personal worth among the boys show that 4-H boys had higher mean scores at grade 6, but drop-outs and non-4-H members had the high score at grade 9, and drop-outs were higher than the other 2 groups at grade 12.

The sense of personal worth scores among the girls were higher for 4-H members at grade 6, 4-H drop-outs at grade 9, and non-members at grade 12.

Differences were small and not significant. Therefore, Hypothesis 4 (c), that there is no difference in feeling of belonging among 4-H members, 4-H drop-outs, and non-4-H members at sixth, ninth or twelfth grades, was accepted.

Social Skills

The term, *social skills,* describes that element of concern for others which enables the individual to subordinate his own egoistic tendencies in favor of interest in the problems of his associates. Table 2 reveals that there was a significant difference in the mean scores for sixth grade boys which favored the 4-H boys. The difference between the sixth grade girls was not significant, however the slight difference favored non-4-H girls.

These data indicated that sixth grade 4-H boys were more considerate and

Table 2—The Mean Scores on Social Skills of Sixth and Ninth Grade 4-H and Non-4-H Boys and Girls in 10 Wisconsin Communities

Group	Grade	C F	4-H Members Mean	4-H Members Number	Non-4-H Members Mean	Non-4-H Members Number	"d"	Higher Mean Score
1. Boys	6	0	9.4	70	8.5	225	3.25	4-H*
2. Girls	6	0	9.7	78	9.7	174	.07	non-4-H
3. Boys	9	4	8.7	9	9.8	9	1.01	non-4-H
4. Boys	9	3	8.7	18	9.4	18	.10	non-4-H
5. Girls	9	4	10.2	19	10.9	19	2.12	non-4-H*

* Significant at .05 level

diplomatic in their relations with friends and strangers and took more interest in the problems of their associates than did the sixth grade non-4-H boys. Based on this analysis, the Hypothesis 1 (d) of no difference in social skills among 4-H and non-4-H members was rejected for boys and accepted for girls at sixth grade.

At ninth grade no significant difference was noted between the matched groups of 4-H and non-4-H boys, but there was a significant difference between 4-H and non-4-H girls. Non-4-H girls had higher mean scores than 4-H girls. Therefore, Hypothesis 2 (d), of no difference in social skills between 4-H and non-4-H boys and girls when certain factors were controlled, was accepted for boys and rejected for girls. It is noteworthy that the 4-H boys excelled in social skills at grade 6, but that this difference disappeared by grade 9.

Analysis of further data for social skills of the ninth grade girls showed that the non-4-H girls had the highest mean score for social skills, while the 4-H girls with 4 years and over ranked second, and those with 1 and 2 years experience ranked third. There was no significant difference and, therefore, Hypothesis 3 (d), that there is no difference in social skills among ninth grade girls with (a) 4 years and over of 4-H experience, (b) 1 and 2 years of 4-H experience, (c) no 4-H experience, was accepted.

It was further noted that 4-H boys had the highest mean score for social skills at grade 6 and 9, followed by the 4-H drop-outs and 4-H non-members. At grade 12, the 4-H drop-outs had the high score, and 4-H members the low score.

Among the girls, the 4-H drop-outs had the highest score at grade 6, the 4-H drop-outs and non-members shared the high score at grade 9, and the non-members had the high score at grade 12.

Without any significant differences occurring, Hypothesis 4 (d), that there is no difference in social skills among 4-H members, 4-H drop-outs, and non-4-H members, was accepted.

Social Standards

The term, *social standards,* describes those values which the individual uses to govern his actions in relation to the rights of others. A sample question from the California Test of Personality related to this area of personal behavior: "Is it all right to cheat when the umpire is not looking?"

The slight difference noted among sixth grade boys was in favor of the non-4-H boys, while the difference among the sixth grade girls favored the 4-H girls.

At ninth grade there was no significant difference between either the boys' or the girls' groups.

Based on the results of the analysis, Hypotheses 1 (e) and 2 (e), (that there is no significant difference in the mean scores for social standards of sixth or ninth grade 4-H and non-4-H boys or girls) were accepted.

Small differences were evident among social standards scores. The 4-H boys excelled at grade 6; while the 4-H drop-outs excelled at grades 9 and 12.

Among the girls, the non-members had the high mean score for social standards at grades 6 and 9, and the 4-H members at grade 12.

Hypothesis 4 (e) (that there is no difference in social standards among 4-H boys, 4-H drop-outs, and non-4-H members at sixth, ninth or twelfth grades) was accepted because none of the differences were significant at the .05 level.

Teacher Rating of Child's Emotional Stability

The child's emotional stability and his social qualities were included in this part of the study as a valuable complement to personal and social data. Scores on these selected factors were based on teacher ratings of the child and his family. On certain factors, only data on the girls had been analyzed at publication date. Table 3 shows that there were significant differences between the mean scores for emotional stability for sixth grade 4-H boys, indicating that 4-H boys were more stable emotionally than non-4-H boys. The difference for sixth grade girls was not significant but favored the 4-H girls. Therefore, Hypothesis 1 (f) (that there is no difference in teacher's rating on emotional stability for 4-H and non-4-H members at sixth grade) was rejected for boys and accepted for girls.

In the matched groups of ninth grade students, the difference was nil between the matched groups of 4-H and non-4-H boys and girls with 4 factors controlled. There was a slight difference in favor of the 4-H boys between the 4-H and non-4-H boys with 3 factors controlled. Hypothesis 2 (f) (that there is no difference in emotional stability among ninth grade 4-H and non-4-H members) was accepted.

An Analysis of Variance on the teacher's rating of the emotional stability for 3 groups of ninth grade girls when they were at sixth grade showed little difference between the mean scores. The *F*-value was not significant. Therefore, Hypothesis 3 (f), of no difference in the teacher's rating on child's emotional stability among ninth grade girls with (a) 4 years and over of 4-H experience, (b) 1 and 2 years 4-H experience and, (c) no 4-H experience, was accepted.

Teacher Rating on Child's Home Opportunities

In the teacher's opinion, the non-4-H girls had least, and the girls with 4 years of 4-H experience had the greatest, home opportunities. The difference tested using the Analysis of Variance Technique was not significant and, therefore, Hypothesis 3 (g), of no difference in teacher rating on child's home opportunities among ninth grade girls with (a) 4 years or more of 4-H experience, (b) 1 or 2 years of 4-H experience, and (c) no 4-H experience, was accepted.

Teacher Rating on Child's Social Qualities

Table 4 shows that there was a difference on the teacher rating for child's social qualities between sixth grade 4-H and non-4-H boys and that it was significant at the .05 level in favor of the 4-H boys. The difference between the sixth grade 4-H and non-4-H girls is significant at the .05 level. These same members (when matched with non-members on selected factors at grade 9) showed no differences. Therefore, Hypothesis 1 (h)

Table 3—The Mean Scores on the Teacher Rating on Child's Emotional Stability For Sixth and Ninth Grade 4-H and Non-4-H Boys and Girls in 10 Wisconsin Communities

Group	Grade	C F	4-H Members Mean	4-H Members Number	Non-4-H Members Mean	Non-4-H Members Number	"d"	Higher Mean Score
1. Boys	6	0	3.2	70	2.9	225	2.87	4-H*
2. Girls	6	0	3.3	78	3.2	174	1.06	4-H
3. Boys	9	4	3.0	9	3.0	9	0	----
4. Boys	9	3	3.1	18	3.0	18	.13	4-H
5. Girls	9	4	3.2	19	3.2	19	0	----

* Significant at the .05 level

Table 4—The Mean Scores on the Teacher Rating on Child's Social Qualities For Sixth and Ninth Grade 4-H and Non-4-H Boys and Girls in 10 Wisconsin Communities

Groups	Grade	C F	4-H Members Mean	4-H Members Number	Non-4-H Members Mean	Non-4-H Members Number	"d"	Higher Mean Score
1. Boys	6	0	3.2	70	3.0	225	3.12	4-H*
2. Girls	6	0	3.4	78	3.2	174	2.17	4-H*
3. Boys	9	4	3.2	9	3.3	9	.25	non-4-H
4. Boys	9	3	3.2	18	3.2	18	0	----
5. Girls	9	4	3.2	19	3.3	19	.20	non-4-H

* Significant at the .05 level

(that there is no difference in teacher's rating of social qualities among 4-H and non-4-H members at sixth grade) was rejected, but Hypothesis 2 (h) was accepted for ninth grade 4-H and non-4-H members.

The analysis of the mean scores for the teacher's rating on sixth grade girls' social qualities indicated that there were no significant differences among the mean scores for ninth grade girls on this factor. The 4-H girls with 4 years and more of 4-H experience received the highest rating. Therefore, Hypothesis 3 (h), that there is no difference in teacher rating on child's social qualities among ninth grade girls with (a) 4 years and more of 4-H experience, (b) 1 and 2 years of 4-H experience, and, (c) no 4-H experience, was accepted.

Teacher Rating on Child's Willingness to Work

In an analysis of 3 groups of girls categorized by 4-H experience, there was no significant difference among them on a teacher's rating of their willingness to work. However, of the 3 groups, the 4-H girls with 4 years and over received the highest rating. Hypothesis 3 (i) was accepted.

The Analysis of Variance for the mean scores of teacher's rating on child's willingness to work in Table 5 for 4-H boys and girls, compared on the basis of progression in 4-H Club projects, indicated a significant difference at the .05 level for boys. Those boys showing no progression or attaining some progression (but less than half of the potential) in their 4-H Club projects were rated the highest at grade 1 in their willingness to work, and those boys with the most progression were rated lowest. There was no significant difference among the girls, but a tendency opposite to that of the boys appeared, as the girls attaining the most progression were rated highest in their willingness to work. Hypothesis 5 (i), that there is no difference in teacher's rating of child's willingness to work was rejected for the boys and accepted for the girls.

Table 5—Analysis of Variance of Mean Scores for Teacher's Rating on Child's Willingness to Work at First and Sixth Grades for Boys Categorized by Levels of Progression Attained in 4-H Club Projects Taken in 4-H Club Tenure in 10 Wisconsin Communities

	Variable	Grade	Levels of Progression: No Prog.	Some Prog.	Over Half Prog.	Maximum Prog.	Total N	F	Sig.
1. Boys	Child's willingness to work	1 N & $\bar{X}$	36	20	8	10	74		
			3.2	3.3	2.4	2.9		3.31	Yes
2. Boys		6 N & $\bar{X}$	36	20	8	10	74		
			3.6	3.3	3.4	2.9		1.41	No
3. Girls		1 N & $\bar{X}$	20	21	6	18	65		
			3.5	3.6	4.0	3.3		1.21	No
4. Girls		6 N & $\bar{X}$	21	21	6	19	67		
			3.8	3.8	4.0	4.2		.67	No

Teacher Rating on Family's Family Background

In Table 6, the mean scores for the teacher's rating on family background are presented. The 4-H girls with 4 years experience were given the highest rating by the teacher at sixth grade and the non-4-H girls were given the lowest rating. The *F*-value obtained from an Analysis of Variance indicated a significant difference among the means at the .05 level. Therefore, Hypothesis 3 (j), of no difference in teacher's rating of family background among ninth grade girls with (a) 4 years and over 4-H experience, (b) 1 and 2 years 4-H experience, (c) no 4-H experience, was rejected.

Table 6—Analysis of Variance for the Mean Scores of the Teacher's Rating of Family's Family Background among Ninth Grade 4-H and Non-4-H Girls in 10 Wisconsin Communities

Groups	Mean Score	Number	F		Tukey's W	Highest Mean Score
1. 4-H girls 4 years & over	3.3	23	.55		−0.14 to 0.51	4 years 4-H
2. 4-H girls 1 and 2 years	3.2	23	.45	4.5*	−0.09 to 0.77	
3. Non-4-H girls	2.9	23	.45		−0.08 to 0.60	

* Significant at the .05 level

Results: School Achievement Factors

In Table 7 the Analysis of Variance for 9 different items and 2 totals in school achievement are presented for ninth grade girls.

There is one significant difference among the 69 girls on these various items. In general, the highest mean score was obtained by the 4-H girls with 4 years or more in club work. They received the highest score for reading, vocabulary, literature, total English (which includes punctuation, capitalization, grammar and use of language). The second place was obtained by the 4-H girls with 1 or 2 years experience and the low mean score was obtained by the non-4-H girls. In spelling, the 4-H girls with 1 and 2 years experience achieved the highest mean score and the 4-H girls with 4 years or more experience were in second place.

The 4-H girls with 4 years and more experience obtained the highest mean scores in arithmetic fundamentals and problems, followed by the 4-H girls with 1 and 2 years experience. In history, the 4-H girls with 4 years and over had the highest score, while the non-4-H girls were in second place. The 4-H girls with 4 years or more had the highest score in geography and the 4-H girls with 1 or 2 years experience had second place.

There was a significant difference in total English scores among the ninth grade girls, but no significant differences in the other variables. When Tukey's W Test was applied to the mean scores for the English factor, there was no difference between the drop-out group and the non-4-H group, or between the drop-out group and the 4-H group. There was, however, a significant difference between the 4-H group and the non-4-H group in total English mean score. Therefore, Hypothesis 6 (i) was rejected, and the other parts of Hypothesis 6 which refer to school achievement were accepted.

Mental Age

Table 8 shows the mean scores for the mental age factor for 3 groups of ninth grade girls, as calculated by the Kuhlmann-Anderson Intelligence Test. When the mean scores of each pair of girls' groups were compared, the ob-

Table 7—Analysis of Variance of the Mean School Achievement Scores for Ninth Grade 4-H and Non-4-H Girls in 10 Wisconsin Communities

Variables in School Achievement	4-year 4-H Girls		1- and 2-year 4-H Girls		Non-4-H Girls			Tukey's W		
	$\bar{X}$	$\acute{o}$	$\bar{X}$	$\acute{o}$	$\bar{X}$	$\acute{o}$	F	4-H'ers Vs. Non-4-H'ers	4-H'ers Vs. Drop-outs	4-H Drop-outs vs. Non-4-H'ers
Arithmetic Fundamentals	41.7	8.4	39.3	10.9	37.5	14.8	1.09			
Arithmetic Problems	22.9	6.6	19.3	8.7	17.7	7.7	2.61			
History	28.3	6.1	26.0	6.5	28.0	12.7	0.55			
Geography	30.1	7.1	28.7	5.9	28.6	6.4	2.74			
Literature	32.7	8.7	31.0	7.4	29.3	7.3	1.07			
Reading	44.4	4.6	43.2	7.5	40.0	7.9	.67			
Spelling	29.9	10.7	32.5	9.5	25.6	8.8	2.10			
Vocabulary	40.0	7.9	41.0	8.2	38.5	7.1	.98			
Total English	53.9	11.1	49.2	7.4	42.7	13.8	4.38*	2.11 to 21.21	−4.35 to 13.95	−2.57 to 15.53
Science	39.7	6.1	36.0	7.0	36.4	7.4	1.16			
Total School Achievement	355.7	64.4	347.1	73.6	341.1	117.6	.46			

* Significant at .05 level

tained *F*-value of 3.82 was significant at the .05 level for the 4-H girls with 4 years experience. Their score was higher than that of the non-4-H girls. Therefore, Hypothesis 6 (1), of no difference in mental age among ninth grade girls with (a) 4 years and over of 4-H experience, (b) 1 and 2 years of 4-H experience and, (c) no 4-H experience, was rejected.

An analysis of the mean scores for the mental age and school achievement for 4-H boys at grades 1, 6, and 9 (categorized on the kinds of 4-H projects in which they engaged during their membership in a 4-H Club) showed no significant differences.

The boys in the garden project had the high mean score for the Chicago Reading Test at grade 1, and the electrical project members had the high mean score for this test at grade 6. The electrical project members had the low mean score at grade 1, and the dairy project members had the low score at grade 6.

There was very little difference in the scores for grade 1 mental age, as measured by the Kuhlmann-Anderson Intelligence Test. There was a greater difference between the project groups at grades 6 and 9, with the garden project members having the highest score and the electrical members having the lowest score at both grades.

There was a greater dispersion for the positions of the mean scores among the groups for the Metropolitan Achievement Test than for the other tests. At grade 1 the high mean score was obtained by the garden project members, and the low score by the electrical project members. At grade 6, the high mean score was obtained by the electrical project members and the low score by the sheep project; while at grade 9, the high score was obtained by the woodworking project and the low score by the dairy and electrical project members.

Analysis of data for the 4-H girls was categorized by clothing, food and livestock projects. There were no significant differences. Girls taking the livestock

Table 8—Analysis of Variance of the Mean Scores of the Kuhlmann-Anderson Mental Age among Ninth Grade 4-H and Non-4-H Girls in 10 Wisconsin Communities

Groups	Mean Score	Number		F	Tukey's W	Highest Mean Score
1. 4-H girls 4 years and over	197.4	23	24.2		−2.98 to 19.24	4 years
2. 4-H girls 1 and 2 years	189.0	23	21.3	3.82*	1.59 to 24.51	
3. Non-4-H members	184.4	23	21.10		−6.89 to 18.03	

* Significant at .05 level

projects tended to have the low mean score for the Chicago Reading Test at grades 1 and 6, for Kuhlmann-Anderson Mental Age at grade 1, and the Metropolitan Achievement Test at grades 1 and 6. The girls in the livestock project were second of the 3 projects in the Kuhlmann-Anderson Mental Age at grades 5 and 9, and Metropolitan Achievement Test at grade 9. There was a distinct tendency for the girls in the clothing project to have high mean scores in all 3 tests at grades 1, 6, and 9. The girls in the food project had the high mean score for the Metropolitan Achievement Test at grade 6. There were no significant differences for either boys or girls at the .05 level. Therefore, Hypothesis 7 (a), that there is no difference in school achievement at grades 1, 6, or 9 among 4-H boys or among 4-H girls when compared on kinds of 4-H projects taken was accepted.

Table 9 shows the results of analysis of data for school achievement for 4-H boys at grades 1, 6, and 9, categorized for Hypothesis 7 by numbers of projects taken during 4-H Club experience.

There was a tendency for the boys taking 10-12 projects to have the highest mean score for the Chicago Reading Test, Kuhlmann-Anderson Mental Age, and the Metropolitan Achievement Test. The one exception to this was shown by the boys at first grade who later took 3 projects, and who obtained the highest mean score for Kuhlmann-Anderson Mental Age. The boys who took 13 projects and over showed a decline in school achievement scores from those boys who took 10-12 projects. There was a significant difference at the .05 level on Kuhlmann-Anderson Mental Age for boys at grade 6 whose 4-H experience included 10-12 projects. Those boys had the higher mean score. Thus Hypothesis 7 (b) is rejected for boys.

Results: Socio-Economic Factors

Analysis of school achievement data for the girls at grades 1, 6 and 9 showed no consistent pattern when categorized by numbers of projects taken. No differences were statistically significant for Hypothesis 7 (a and c).

The high mean scores at grades 1, and 6 for the Chicago Reading Test were attained by those girls taking only one project. The high mean score for the Kuhlmann-Anderson Mental Age was earned at grade 1 by those students later taking 7 to 9 projects, at grade 6 by students taking 2 projects, and at grade 9 by students taking 10-12 projects. The high score for the Metropolitan Achievement Test at grade 1 was attained by those girls taking 1 project, at grade 6 by members taking 2 projects, and at grade 9 by members taking 10-12 projects. On the basis of these findings, Hypothesis 7 (b) (that there is no difference in mental age at grades 1, 6 or 9 among 4-H boys or among 4-H girls when compared on the number of 4-H projects taken) was rejected for boys and accepted for girls.

Table 10 presents the mean scores for the school achievement factors for boys at grades 1, 6, and 9, compared on the amount of 4-H progression attained.

Table 9—Analysis of Variance of School Achievement Factors for Boys at Grades 1, 6, and 9, Categorized by Numbers of 4-H Projects Taken During 4-H Club Tenure

No.	Grade	Variable		NUMBERS OF PROJECTS									
				1	2	3	4–6	7–9	10–12	13 up	N	F	Sig.
1.	1	Chicago Reading Test	N	15	8	10	13	8	6	14	74		
			$\bar{X}$	33.0	34.0	32.4	26.2	30.4	36.8	36.7		.98	No
	6		N	15	8	10	13	8	6	14	73		
			$\bar{X}$	93.9	84.4	91.7	99.2	95.6	113.0	87.3		1.61	No
2.	1	Kuhlmann-Anderson Mental Age	N	15	8	10	13	9	6	14	75		
			$\bar{X}$	85.4	84.0	87.9	86.3	86.0	86.6	86.1		.54	No
	6		N	15	8	10	13	9	6	14	75		
			$\bar{X}$	146.5	136.7	150.4	152.3	145.8	160.0	145.7		3.09	Yes
	9		N	14	8	10	13	9	6	14	75		
			$\bar{X}$	177.7	167.8	189.7	187.9	188.7	203.1	188.8		1.83	No
3.	1	Metropolitan Achievement Test	N	15	8	10	13	9	6	14	75		
			$\bar{X}$	98.0	92.6	104.4	95.3	90.6	123.8	102.1		1.20	No
	6		N	15	7	10	12	9	6	14	73		
			$\bar{X}$	305.1	222.4	263.0	312.4	296.0	334.6	298.6		1.82	No
	9		N	14	8	10	13	9	6	14	74		
			$\bar{X}$	310.6	279.6	319.9	332.3	322.6	383.5	305.7		1.85	No

Table 10—Analysis of Variance of School Achievement Factors for Boys at Grades 1, 6, and 9, Categorized by Levels of Progression of 4-H Projects Taken During 4-H Club Tenure

No.	Grade	Variable	LEVELS OF PROGRESSION							
				No. Prog.	Some Prog.	Over Half Prog.	Maximum Prog.	N	F	Sig.
1.	1	Chicago Reading Test	N	36	19	8	10	73		
			$\bar{X}$	32.1	31.8	41.5	27.7		3.67	Yes
	6		N	36	19	8	9	72		
			$\bar{X}$	93.1	97.7	91.7	86.6		.70	No
2.	1	Kuhlmann-Anderson Mental Age	N	36	20	8	10	74		
			$\bar{X}$	86.5	85.8	87.1	83.9		1.06	No
	6		N	36	20	8	10	73		
			$\bar{X}$	147.2	150.7	148.5	144.5		.48	No
	9		N	35	20	8	10	73		
			$\bar{X}$	183.5	189.6	192.7	179.5		.68	No
3.	1	Metropolitan Achievement Test	N	36	20	8	10	74		
			$\bar{X}$	99.8	103.9	116.0	77.0		3.67	Yes
	6		N	34	20	8	10	72		
			$\bar{X}$	293.1	297.8	328.0	267.0		1.15	No
	9		N	35	20	8	10	73		
			$\bar{X}$	315.5	333.3	308.7	302.6		.41	No

A lower score for achievement appeared consistently throughout Table 10 for those boys who took 13 projects and over, as compared with those who took 10-12 projects.

For the Chicago Reading Test at grade 1, the high mean score was attained by those boys showing over half progression but less than total, and at grade 6 by those showing some progression but less than half.

The high score for the Kuhlmann-Anderson Mental Age was obtained at grade 1 by those boys showing over half progression but less than total, at grade 6 by those boys showing some progression but less than half, and at grade 9 by those with over half progression but less than maximum.

The high score for the Metropolitan Achievement Test at grades 1 and 6 was obtained by those boys showing over half progression but less than total; and at grade 9 by those boys showing some progression but less than half. There was a significant difference at the .05 level between the mean scores on the Chicago Reading Test and on the Metropolitan Achievement Test for boys at grade 1.

The school achievement scores for girls (when categorized by levels of progression attained in 4-H projects) showed no consistent pattern of difference as there was for the boys. There were no statistically significant differences.

The high mean score for the Chicago Reading Test at grade 1 was attained by those girls showing maximum progress, and at grade 6 by those girls showing none.

The high score for the Kuhlmann-Anderson Mental Age at grades 1, 6, and 9 was attained by those showing over half progression but less than total.

The highest scores for Metropolitan Achievement Tests at grades 1, 6, and 9 were attained by those girls showing maximum progression. Hypothesis 7 (c) (that there are no differences in school achievement at grades 1, 6, or 9 among 4-H boys or among 4-H girls when compared on the basis of level of progression

Table 11—Analysis of Variance of Mean Scores of Number of Children in the Family and Number of Organizations to Which Parents Belong at Grades 1 and 6 for Boys, Categorized by Kinds of 4-H Projects Taken During 4-H Club Tenure in 10 Wisconsin Communities

Group	Grade		Kinds of Projects					Total N	F	Sig.
			Dairy	Electric	Garden	Sheep	Wood-working			
1. Boys	1	N	21	8	18	6	21	74	.82	No
		$\bar{X}$	3.5	3.6	3.3	4.5	3.4			
2. Boys	6	N	21	8	17	4	22	72	4.01*	Yes
		$\bar{X}$	3.9	4.0	4.4	6.8	3.8			

* Significant at the .05 level

attained in 4-H projects) was rejected for boys and accepted for girls.

Number of Children in the Family

The number of children in the family was not a statistically significant factor in determining the age at which a boy or girl joins a 4-H Club. The mean number of children was almost identical in each group of girls' families when categorized by age at joining a 4-H Club. There was about 1 child more per family in the boys' group who joined later than 11.5 years of age than among those who joined earlier, but this difference was not statistically significant. Therefore, Hypothesis 9 (a) (that there is no difference in number of children in the family when compared at age of joining 4-H) was accepted.

Boys who belong to 4-H Clubs for 4 or more years come from families that have, on the average, 1 less child per family than the drop-out groups. Smaller differences were observed among the girls in the various age categories, but none of the differences were significant. Therefore, Hypothesis 10 (a) (that there is no difference in the number of children in the family when compared on the basis of 4-H membership tenure) was accepted.

Table 11 shows no significant differences in the number of children in the family for boys at grade 1, when they were compared by kinds of projects. There was, however, a significant difference at grade 6. At the grade 1 and 6 level, boys taking the sheep project belonged to families having more children than did those of boys taking dairy, electrical, garden or woodworking.

There were no significant differences in number of children in the family among the girls in clothing, food and livestock projcets. Therefore, Hypothesis 11 (a) (that there is no difference in number of children in the family when 4-H members in grade 6 or prior to membership in grade 1 were compared on the kinds of 4-H projects taken) was rejected for the boys and accepted for the girls.

Table 12—Analysis of Variance of Mean Scores of Number of Children in the Family of Those in Grades 1 and 6 for Boys and Girls, Categorized by Numbers of 4-H Projects Taken During 4-H Club Tenure in 10 Wisconsin Counties

Group	Grade		Number of 4-H Projects							Total N	F	Sig.
			1	2	3	4-6	7-9	10-12	13 up			
1. Boys	1	N	15	8	9	13	9	6	14	74	1.34	No
		$\bar{X}$	3.9	2.7	3.7	4.1	4.1	3.0	2.9			
2. Boys	6	N	15	7	10	11	9	6	14	72	.58	No
		$\bar{X}$	4.8	3.8	4.2	4.2	4.5	3.5	3.6			
3. Girls	1	N	7	7	10	9	9	11	13	66	2.83*	Yes
		$\bar{X}$	3.7	4.2	3.9	5.7	3.6	2.4	3.3			
4. Girls	6	N	7	7	10	9	9	12	13	66	3.15*	Yes
		$\bar{X}$	4.2	5.5	4.3	5.8	3.5	2.6	4.3			

* Significant at the .05 level

In Table 12, there was no significant difference indicated for number of children in the family among the boys, compared by total number of projects. Those boys in grade 1 who later took 4-6, and 7-9 projects had the most brothers and sisters. However, at grade 6 individuals in these 2 categories were in second and third place, with those boys who took one project coming from the largest families.

Table 12 shows that there is a significant difference in number of children in the family among girls at both grade 1 and 6, when compared by the number of 4-H projects taken. In both instances, those girls who took 4-6 projects had the highest mean score for this factor. Hypothesis 11 (a) (that there are no differences in the number of children in the family at grades 1 or 6 among 4-H boys or among 4-H girls when compared on the numbers of 4-H projects taken) was accepted for boys and rejected for girls.

Number of Cows Owned by Families

Table 13 shows that parents of boys in the dairy project owned the most cows. On this factor there was a significant difference in favor of the dairy project members at grade 1. The electrical project members were second, with those taking the sheep project next. At grade 6, the dairy project members were again from families with the most cows and next were the electrical project members.

In Table 14, there was one significant difference among the means for the number of cows owned by families of girls taking various kinds of projects. It is noted that the families of girls taking livestock projects had more cows when the girls were in grade 1 and significantly more at grade 6 than the families of girls taking food or clothing projects.

Hypothesis 11 (b) (that there is no difference in number of cows owned by families at grade 1 or 6 among 4-H boys or among 4-H girls when compared on the basis of kinds of 4-H projects taken) was rejected for boys and for girls.

Number of Organizations to Which Parents Belong

Among the boys and girls who joined 4-H after 11.5 years of age, their parents belonged to the fewest organizations. The parents of the boys who joined under 10.5 years of age belonged to the most organizations. The parents of girls who joined 4-H between 10.5 and 11.5 years of age belonged to the most organizations among the girls' groups. Similarly, parents of girls joining after 11.5 years of age belonged to the fewest organizations. None of the differences were significant. Therefore, Hypothesis 9 (c) (that there are no differences in number of organizations to which parents belong among ninth grade boys and girls, when compared on basis of age at joining 4-H) was accepted.

Table 15 shows that the number of organizations to which parents belong varied from a mean score of 4.27 organizations for parents of boys in club work for 4 or more years, to a low of 1.85 organizations for parents of boys who dropped out after 1 year. This difference was significant at the .05 level, as was the difference between the 4-year members and the 2- and 3-year members.

Table 13—Analysis of Variance of Mean Scores for Number of Cows Owned by Families of First and Sixth Grade Boys, Categorized by Kinds of 4-H Club Projects Taken During 4-H Club Tenure in 10 Wisconsin Communities

Group	Grade		Kinds of Projects					Total N	F	Sig.
			Dairy	Electrical	Garden	Sheep	Woodworking			
1. Boys	1	N	21	6	15	6	16	64		
		$\bar{X}$	5.7	5.3	3.2	5.0	4.3		2.74*	Yes
2. Boys	6	N	21	5	14	4	14	58		
		$\bar{X}$	6.0	5.8	4.1	4.7	4.5		1.13	No

* Significant at .05 level

Table 14—Analysis of Variance of Mean Scores of Number of Cows Owned by Families of First and Sixth Grade Girls, Categorized by Kinds of 4-H Projects Taken During 4-H Club Tenure in 10 Wisconsin Communities

Group	Grade		Kinds of Projects			N	F	Sig.
			Clothing	Food	Livestock			
1. Girls	1	N	19	18	11	48		
		$\bar{X}$	4.6	4.2	5.4		1.24	No
2. Girls	6	N	18	13	11	42		
		$\bar{X}$	5.1	4.3	6.8		4.36*	Yes

* Significant at the .05 level

Table 15—Analysis of Variance for Mean Scores of Numbers of Organizations to Which Parents Belong for Ninth Grade Boys and Girls, Categorized by Membership Tenure in 4-H Clubs in 10 Wisconsin Communities

Group	4-H Membership Tenure						F
	1 year drop-out		2-3 year drop-out		4 yrs. and over		
	Mean	Number	Mean	Number	Mean	Number	
1. Boys	1.8	20	2.5	19	4.2	26	6.26*
2. Girls	2.7	14	2.5	16	3.4	37	.90

* Significant at the .05 level

Although the parents of girls who had been members for 4 or more years belonged to more organizations than either of the drop-out groups, the differences were not significant. Hypothesis 10 (c) (that there is no difference in number of organizations to which parents belong, among ninth grade boys and girls compared by 4-H membership tenure) was rejected for boys and accepted for girls.

The parents of dairy project members and woodworking project members belonged to more organizations when their children were in grades 1 and 6 than did parents of electrical, garden or sheep project members. There was no significant difference among the boys when categorized by kinds of 4-H projects taken.

In Table 16, there was a significant difference shown for girls at grade 1, but not at grade 6, for the number of organizations to which parents belong. In both instances, the parents of girls in the livestock projects belonged to more organizations than parents of girls taking food and clothing projects. Analysis indicates the Hypothesis 11 (c) (that there are no differences in number of organizations to which parents belong among 4-H boys and girls at grades 1 or 6, compared by kinds of 4-H projects taken) was accepted for boys and rejected for girls.

Table 17 shows a significant difference in parents' organizational affiliations for boys at grades 1 and 6, when compared by the number of 4-H projects taken

Table 16—Analysis of Variance of Mean Scores of Number of Organizations to Which Parents Belong for Girls, Categorized by Kinds of 4-H Projects Taken During 4-H Club Tenure in 10 Wisconsin Communities

Group	Grade		Kinds of Projects			Total N	F	Sig.
			Clothing	Food	Livestock			
1. Girls	1	N	31	23	10	64		
		$\bar{X}$	2.1	2.2	4.0		4.74*	Yes
2. Girls	6	N	30	22	11	63		
		$\bar{X}$	3.0	3.3	4.7		2.50	No

* Significant at the .05 level

Table 17—Analysis of Variance of Mean Scores of Number of Organizations to Which Parents Belong at Grades 1 and 6 for Boys and Girls, Categorized by Number of 4-H Projects Taken During 4-H Club Tenure in 10 Wisconsin Communities

Group	Grade		Number of 4-H Projects							Total N	F	Sig.
			1	2	3	4-6	7-9	10-12	13 up			
1. Boys	1	N	15	8	9	13	9	6	14	74		
		$\bar{X}$	2.0	1.7	2.0	1.6	4.3	3.5	3.4		2.54*	Yes
2. Boys	6	N	15	7	10	10	9	6	13	70		
		$\bar{X}$	1.8	2.4	2.4	2.1	4.7	4.8	5.1		3.19*	Yes
3. Girls	1	N	6	7	10	9	9	11	12	64		
		$\bar{X}$	2.0	2.5	.7	3.1	2.0	3.0	3.2		1.69	No
4. Girls	6	N	6	7	10	9	8	12	11	63		
		$\bar{X}$	3.3	4.4	2.1	2.7	2.2	4.5	4.2		1.65	No

* Significant at the .05 level

during 4-H Club membership. At grade 1, the parents of boys who took 7-9 projects belonged to the most organizations. The parents of boys who took the fewest projects belonged to the fewest organizations.

In Table 17 no significant differences were noted among girls who took different numbers of 4-H projects. Hypothesis 11 (c) (that there are no differences in the number of organizations to which parents belong among 4-H boys and girls at grades 1 or 6 compared by number of 4-H projects taken) was rejected for boys and accepted for girls.

Table 18 reveals a significant difference at grade 6 among the mean scores for boys, compared on the levels of 4-H project progression attained, but no difference at grade 1. The parents of those boys who attained over half progression, but less than the maximum, belonged to the most organizations.

Hypothesis 11 (c) (that there is no difference in number of organizations to which parents belong among 4-H boys or 4-H girls at grades 1 or 6, compared by level of progression attained in 4-H projects) was rejected for boys and accepted for girls.

Occupation of Father

Analysis shows that regardless of age most boys and girls joining 4-H Clubs came from farms. A total of 59.8% of all boys and 47.6% of all girls joining 4-H Clubs in the study communities were from farms. These figures resemble state-wide percentages. Most boys and girls from farms joined early. Among members studied, only 2 boys and 6 girls had fathers who were day laborers.

Data were also analyzed by membership status for those students whose fathers were in various occupational groups. Slightly more non-farm boys dropped out of 4-H Club work after 1 year than farm boys. The difference wasn't significant.

Table 18—Analysis of Variance of Mean Scores of Number of Organizations to Which Parents Belong at Grades One and Six for Boys and Girls, Categorized by Levels of Progression of 4-H Projects Taken During 4-H Club Tenure in 10 Wisconsin Communities

Group	Grade		Levels of 4-H Progression				Total N	F	Sig.
			No Prog.	Some Prog.	Over Half Prog.	Maximum Prog.			
1. Boys	1	N	36	19	8	10	73		
		$\bar{X}$	2.2	2.2	3.6	2.7		.85	No
2. Boys	6	N	34	19	7	9	69		
		$\bar{X}$	2.5	3.5	5.5	3.6		2.72*	Yes
3. Girls	1	N	20	20	6	18	64		
		$\bar{X}$	2.4	2.3	2.3	2.6		.05	No
4. Girls	6	N	20	21	5	17	63		
		$\bar{X}$	3.7	2.8	4.4	3.5		.74	No

* Significant at the .05 level

For girls, the proportion of those remaining in 4-H Clubs and those dropping out was about the same, whether their fathers were farmers or engaged in some other occupation.

Data were also analyzed for 4-H boys and girls when they were categorized by kinds, numbers and levels of progression of 4-H projects. There were no significant differences for either boys or girls and, therefore, Hypothesis 9 (d), 10 (d), 11 (d) (that there are no differences in father's occupation among 4-H boys or among 4-H girls when compared by the age at joining, by membership tenure, and on the basis of kinds, numbers and progression of 4-H projects, was accepted.

Sewell Socio-Economic Score

The Sewell Scale (short form) was used to measure the socio-economic status of the families, and Table 19 shows a statistically significant difference at the .05 level between 4-H and non-4-H boys in favor of the 4-H boys. There was only a slight difference between the 4-H and non-4-H girls in favor of the 4-H girls. This concurs with earlier findings that the 4-H membership was selective, especially among boys, and was not attaining the scope desired. Hypothesis 8 (that there is no difference in socio-economic status among sixth grade 4-H and non-4-H boys or girls) was rejected for boys and accepted for girls.

The mean score obtained from the Sewell Socio-Economic Scale was lower (but not significantly) for the boys and girls who joined after 11.5 years of age. Scores for both boys and girls who joined after 11.5 years of age were similar. Those boys who joined at 10.5 to 11.5 years of age had the high mean socio-economic score for boys. The girls who joined under 10.5 years of age had the high girls' score. The findings indicate that Hypothesis 9 (e) (that there are no differences in socio-economic status among ninth grade 4-H boys or 4-H girls when compared on the basis of age of joining 4-H) was accepted.

Table 20 provides information on the Sewell Socio-Economic Scale for the families of ninth grade students. The difference in the mean scores was significant at the .05 level. The difference in the mean scores (of 80.88 for boys who had been in 4-H Club work 4 or more years and of 73.20 for boys who had been in club work for 1 year and dropped out) was also significant at the .05 level. The mean score for boys dropping out of clubs after 2 or 3 years was 77.00. This point was midway between the mean scores of the other 2 groups.

Table 19—The Mean Scores on the Socio-Economic Status of the Family of Sixth Grade 4-H and Non-4-H Boys and Girls in 10 Wisconsin Communities

Group	4-H Members		Non-4-H Members		"d"	Higher Mean Score
	Mean	Number	Mean	Number		
1. Boys	77.2	70	72.8	225	3.29	4-H*
2. Girls	75.3	78	74.2	174	0.79	4-H

* Significant at the .05 level

Table 20—Analysis of Variance of Mean Scores for Sewell Socio-Economic Scale of Ninth Grade Boys and Girls. Categorized by Membership Tenure in 10 Wisconsin Communities

Group	4-H Membership Tenure						F
	1 year drop-out		2-3 year drop-out		4 yrs. and over		
	Mean	Number	Mean	Number	Mean	Number	
1. Boys	73.2	20	77.0	19	80.8	26	4.89*
2. Girls	73.3	14	78.0	16	76.2	37	.96

* Significant at .05 level

The differences among socio-economic mean scores for girls were not statistically significant. The girls who had dropped out after 2 or 3 years of membership scored highest. The 1-year drop-outs had the lowest mean score, and in this respect resembled boys' groups. These findings indicate that Hypothesis 10 (e) (there are no differences in socio-economic status among ninth grade boys or girls when compared on the basis of 4-H Club membership tenure) could be rejected for boys and accepted for girls.

The means for the Sewell Socio-Economic Scale for boys at grades 1 and 6 were highest among members who took dairy and woodworking projects. The low mean score at both grades appeared among sheep project members. There was a greater improvement between grades 1 and 6 for the sheep and garden members than in the other categories, which remained almost the same. None of the differences were statistically significant.

Girls taking the livestock project had higher mean scores at both grades 1 and 6 than those taking food and clothing projects, but the difference was not statistically significant. Hypothesis 11 (e) (that there are no differences in socio-economic status among 4-H boys or among 4-H girls when categorized on the basis of the kinds of projects taken) was accepted.

Most of the girls in the livestock project took the dairy project. Like boys, girls with dairy projects belong to a higher socio-economic group than do other 4-H Club members.

The mean scores for the Sewell Socio-Economic Scale for boys and girls categorized by numbers of 4-H projects are given in Table 21. Those boys who took 7-9 or 10-12 projects had the high mean score at grade 1, and those boys who took 1 or 3 projects had the low mean score. At grade 6, boys with high mean scores were those who took 7-9, 10-12 and 13 projects and over. There was a significant difference at grade 1.

The pattern for mean scores for the Sewell Socio-Economic Scale for girls in Table 21 was similar to the boys'. The high mean scores were made at grades 1 and 6 by those girls who took 10-12 and 13 projects and over. The low mean scores at grades 1 and 6 were made by those girls who took 3 and 4-6 projects. There were no significant differences for the girls, although the *F*-value of 2.07 at grade 1 does approach the significant *F*-value of 2.27. Hypothesis 11 (e) (that there are no differences in socio-economic status at grades 1 or 6 among 4-H boys or among 4-H girls when classified by the numbers of 4-H projects taken) was rejected for the boys and accepted for the girls.

An analysis of the mean scores for the Sewell Socio-Economic Scale for boys and girls, categorized by the levels of progression attained in the 4-H projects shows that the low mean score among the boys at grade 1 was made by those boys who had no progression and the high mean score by those boys who attained maximum progression. At grade 6, the low mean score for boys was still earned by those boys who showed no progression but the high mean score was achieved by those boys who attained more than half, but less than the maximum, progression.

The girls' scores followed a different pattern from that of the boys' at grade 1. The high mean score was made by the girls who attained maximum progression; but the girls did not duplicate the boys' steady rise from the level of no progression to the maximum. At grade 6 both boys and girls who attained over half progression, but less than total, scored highest. Differing from the boys, the low mean score was earned by those girls who attained some progression but less than half.

There were no significant differences in the socio-economic score for either boys or girls when compared on project progression. Therefore, Hypothesis 11 (e) (that there is no difference in socio-economic status among 4-H boys or among 4-H girls at grades 1 or 6, when compared on the basis of level of progression attained in 4-H projects) was accepted.

Table 21—Analysis of Variance of Mean Scores for Sewell Socio-Economic Scale at Grades 1 and 6 for Boys and Girls, Categorized by Numbers of 4-H Projects Taken During 4-H Club Tenure in 10 Wisconsin Communities

Group	Grade		Numbers of 4-H Projects							Total N	F	Sig.
			1	2	3	4-6	7-9	10-12	13 up			
1. Boys	1	N & $\bar{X}$	15 69.9	8 73.0	10 68.7	13 73.6	9 82.5	6 81.8	14 79.3	75	2.28*	Yes
2. Boys	6	N & $\bar{X}$	15 72.6	7 78.1	10 73.4	12 75.9	9 79.5	6 80.8	14 80.9	73	1.42	No
3. Girls	1	N & $\bar{X}$	7 73.8	7 76.0	10 67.7	9 69.1	9 71.6	11 81.3	13 77.9	66	2.07	No
4. Girls	6	N & $\bar{X}$	7 78.2	7 77.8	10 73.1	9 70.2	8 74.1	12 77.6	13 79.0	66	1.01	No

*Significant at .05 level

Size of Farm

The data for farm size broken into 9 classes:

1- (1-40) acres
2- (41-80) acres
3- (81-120) acres
4- (121-160) acres
5- (161-200) acres
6- (201-240) acres
7- (241-280) acres
8- (281-320) acres
9- (321 +) acres

As seen in Table 22, there was a difference in the size of the farm owned by parents of boys who joined 4-H at different ages. Boys who joined at a later age came from larger farms. The difference between those who joined later than 11.5 years of age and those who joined before 10.5 years of age was significant at the .05 level. The difference was also significant between those who joined between 10.5 and 11.5 years and those who joined after 11.5 years of age. On the basis of this finding, Hypothesis 9 (f) (that there is no difference in socio-economic status among ninth grade boys or girls when compared on age of joining 4-H) was rejected for boys and accepted for girls.

The average size of a farm owned by parents of ninth grade students was not a statistically significant factor associated with membership tenure in 4-H Clubs. Members who dropped out of club work after 2 or 3 years came from the largest farms among both the boys and girls. Boys who remained in 4-H Club work 4 or more years tended to come from the smallest farms, but among the girls the smallest farms were associated with those girls who dropped out of 4-H work after only 1 year of membership. Hypothesis 10 (f) (that there is no difference in size of the parents' farm for ninth grade 4-H boys or girls when compared on the basis of 4-H membership tenure) was accepted.

The mean scores were analyzed for size of farm for families of boys categorized on kinds of 4-H projects. At grade 1 the boys taking dairy and electrical projects came from the largest farms and the garden project members, the smallest

Table 22—Analysis of Variance of Mean Scores for Size of Farm of Families of Ninth Grade Boys and Girls, Categorized by Age of Joining 4-H Clubs in 10 Wisconsin Communities

Group	Age at Joining 4-H						F
	Under 10.5		10.5 to 11.5		Over 11.5		
	Mean	Number	Mean	Number	Mean	Number	
1. Boys	4.1	27	3.5	27	5.5	38	8.31*
2. Girls	4.0	30	3.4	32	3.5	22	.62

* Significant at .05 level

Table 23—Analysis of Variance of Mean Scores for Teacher Rating on Family's Financial Status at Grades 1 and 6 for Boys, Categorized by Kinds of 4-H Projects Taken During 4-H Club Tenure in 10 Wisconsin Communities

Variable	Grade		Kinds of 4-H Projects					Total N	F	Sig.
			Dairy	Electrical	Garden	Sheep	Woodworking			
1. Family's financial status	1	N & $\bar{X}$	21 3.0	8 2.7	18 2.9	6 3.0	22 3.2	75	1.17	No
2.	6	N & $\bar{X}$	21 3.3	8 3.7	18 2.7	6 3.0	22 3.1	75	2.93*	Yes

* Significant at the .0 5 leve

farms. There was little change at grade 6. The woodworking project members made the greatest increase in size of farm from 3.4 at grade 1 to 4.2 at grade 6. There were no significant differences. Hypothesis 11 (f) for boys was accepted.

The mean scores for boys and girls compared by number of 4-H projects taken shows that the boys who took 7-9 projects came from families at grade 1 who had the largest farms. At grade 6 those boys who took 3 or 4-6 projects lived on the largest farms.

There was little difference among the girls at grade 1, but there was a greater difference among them at grade 6. The girls who took 7-9 projects came from families with the largest farms at grades 1 and 6, when compared by numbers of projects taken. There were no significant differences. Therefore, Hypothesis 11 (f) (that there is no difference in size of farm among 4-H boys or among 4-H girls at grades 1 or 6 when compared by kinds and numbers of 4-H projects taken) was accepted.

Teacher's Rating on Family Traits

The teacher's rating at grades 1 and 6 for family's financial status is given for boys in Table 23 categorized on kinds of 4-H projects taken. The boys taking the dairy and woodworking projects were rated highest at grade 1. At grade 6 the members in the dairy, woodworking, and electrical projects were rated highest on family's financial status. The financial rating of those boys taking the electrical project showed the greatest increase between grades 1 and 6. This finding supported that reported earlier where boys taking the dairy, electrical and woodworking projects were reported as having higher Sewell Socio-Economic scores than the boys taking garden and sheep projects. There was a significant difference at the .05 level for the teacher's rating on family's financial status at grade 6. Therefore, Hypothesis 11 (g) (that there is no difference in teacher's rating for family's financial status for 4-H members at grades 1 and 6, when categorized on kinds of 4-H projects taken) was rejected for boys and accepted for girls.

Teachers' ratings on 3 family traits for boys were examined and the findings reported in Table 24, with 4-H boys categorized by 4-H membership tenure. There were significant differences among the boys on the family background. The teacher rated lowest those ninth grade boys who dropped out after 1 year of 4-H membership, and rated most highly those boys who were still in 4-H work after 4 years. (The teachers made their ratings when the student was in grade 6.) The difference noted was statistically significant at the .05 level. Therefore, Hypothesis 10 (g) (that there is no difference in teacher's rating of family's family background among ninth grade boys when classified on membership tenure) was rejected.

Teacher's rating on family's educational status [Hypothesis 10 (h)] yields an *F*-value of 2.38, which was not large enough for 3.14 required for statistical significance. Nevertheless, it is worthy of note as the teacher rated lowest the families of those boys dropping out after

Table 24—Analysis of Variance of Mean Scores for Teacher Rating of Certain Family Traits for Ninth Grade Boys, Categorized by 4-H Club Membership Tenure in 10 Wisconsin Communities

Family Traits	Boys			F
	Membership Tenure			
	1 year Drop-out	2-3 years Drop-out	4 Years Membership	
	N=20	N=19	N=26	
Family's Family Background	3.0	3.3	3.4	3.28*
Family's Educational Status	2.9	3.0	3.4	2.38
Family's Financial Status	2.8	3.1	3.3	2.97

* Significant at the .05 level

only 1 year in club work and the highest those who stayed in 4-H Club work for 4 years.

When data were analyzed for the school levels attained by parents of the 4-H Club members in the study, the fathers of the boys in 4 years of 4-H work and over had the highest number of years of schooling (11.2 years). This may contribue to the teacher's image of the family's educational status, recorded in Table 24.

The teacher's rating on family's financial status for boys, [Hypothesis 10 (i)] categorized by 4-H membership tenure, produced an *F*-value of 2.97 — which approached the 3.14 required for statistical significance. Those boys who dropped out after 1 year received the lowest rating and those who had 4 years or more 4-H experience received the highest rating. This rating corroborated the finding in Table 20 where the analysis of social status score data for boys revealed a significant difference at the .05 level. In Table 20 those boys with 4 years and over of 4-H membership came from families who had the highest score on the Sewell Socio-Economic Scale. These findings lend strength to the suggestion made in earlier studies that 4-H was economically selective.

Hypothesis 10 (g) was rejected because significant differences in family background were found among the ninth grade boys, when compared on the basis of 4-H membership tenure.

Other Sociological Factors

Brothers or Sisters in 4-H Club Work

The age at which a boy joins a 4-H Club was related to whether or not he had brothers or sisters in 4-H Club work. Analysis of data showed that boys who joined before 10.5 years of age had more siblings in 4-H Club work than those joining at a later age. This was not the case with girls.

The first year of club work seemed to be more critical for those members without brothers and sisters in the 4-H Club program. A significantly greater number of drop-outs occurred after the first year of membership from among those without siblings in the program. After 2 or more years of membership, the presence of siblings in the program was not significantly related to drop-outs.

Church Affiliation of Parents

Data examined included that of ninth grade students categorized by parents with various church affiliations and by student age of joining a 4-H Club. Boys coming from Lutheran homes joined 4-H Clubs at a significantly earlier age than those coming from Catholic homes. There were 44.5% of the Lutheran boys who joined before 10.5 years of age and 14.8% of the Catholic boys who joined before 10.5 years of age. This compares with 34.2% of Lutheran boys who joined 4-H after 11.5 years of age, as compared with 42.1% of the boys from Catholic

homes who joined after they were 11.5 years of age.

This same pattern of enrollment was true of girls, although a greater percentage of girls from Catholic homes joined before 10.5 years of age than boys.

Protestant boys joined in about equal proportions in all age groups, whereas protestant girls tended to join in greatest numbers at 10.5 to 11.5 years of age.

Data were also analyzed to determine the relationship between church affiliation and 4-H membership tenure. They showed that students with parents of Lutheran church affiliation remained in club work significantly longer than did those with Catholic parents. It was difficult to compare students among Protestant families because of the small numbers in each of the Protestant denominations involved.

Nationality of Parents

About two-thirds of the students in the study came from families where the mother and father were of different nationality origin. Because of the relatively small number in each of the nationality groupings, no statistical conclusions could be drawn.

The greatest percentage of boys and girls came from families where the mother and father were of different nationality origin. This did give a picture of the heterogeneity of the communities from which the sample was taken.

Parents' Attendance at 4-H Meetings

Analyzed data on parents' attendance at 4-H meetings as reported by the ninth grade students showed a significant relationship to age at joining 4-H Clubs. The parents of 4-H members (both boys and girls) attended meetings significantly more often when their children joined 4-H Clubs at an early age. Over 40% of both boys and girls who joined after 11.5 years of age indicated that their parents never attend 4-H meetings. About 60% of students who joined at ages younger than 10.5 years indicated that their parents attended 4-H meetings sometimes or always.

Parents' attendance at meetings was apparently associated with tenure in 4-H Clubs. When students who dropped out after 1 year were compared with those who stayed in club work, it was noted that parents of the former attended significantly fewer 4-H Club meetings. The students who remain in club work for 4 or more years indicated that their parents attended meetings more regularly than either of the drop-out groups.

Parents' Interest in Child Being 4-H Club Member

Ninth grade students indicated that the interest their parents had in their being a 4-H Club member was related to the age at which they joined 4-H Clubs. A significantly greater percentage of students who indicated that their parents were very interested in their becoming a 4-H member, joined before 10.5 years of age. A significantly greater percentage of students indicating that their parents didn't care or didn't want them to join, enrolled in 4-H Clubs later than 11.5 years.

The students indicated that their parents' interest in having them associated with the 4-H Club program bore a close relationship with tenure in 4-H Clubs. Students who remained in club work indicated more often that their parents were interested in having them belong to 4-H Clubs than either of the drop-out groups. Seventy per cent of the boys and 64.3% of the girls dropping out of club work had indicated earlier that their parents didn't care or didn't want them to join 4-H Clubs. Those differences were statistically significant.

Parent Is a Leader in 4-H

An examination of data showed a significant relationship between age of children joining 4-H Clubs and parents being club leaders. Children whose parents were club leaders joined earlier than those whose parents were not. However, this study did not show

whether having a parent act as a club leader caused their children to join at a younger age or whether the parent was more likely to act as a 4-H leader when their child joined a 4-H Club early.

A significantly larger number of members who stayed in club work had parents acting as local leaders than students who drop out. Only 2 boys and one girl who had dropped out of club work after 1 year had parents who acted as 4-H Club leaders.

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2. Brack, Robert E., "A Study of the Relationship of Family Background and Status to the Age of Joining and Persistence in 4-H Club Work of Students in the Ninth Grade in Ten Wisconsin Communities", Unpublished Master's Thesis, University of Wisconsin, Madison, 1961, 87 pages.

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6. Subaima, Gathikonda V., "A Comparative Study Among 4-H Girls of Four Years and Over One and Two Year 4-H Drop-outs and Non-4-H Girls of Ninth Grade in Ten Selected Communities in Wisconsin To Determine Differences in School Achievement and Social Behavior." Unpublished Ph.D. Dissertation, University of Wisconsin, Madison, 1961, 106 pages.

Appendix

Statistical Analysis

Five different types of statistical analysis were used in an effort to deal rigorously with a variety of data.

Hypotheses 1, 2, and 8 were tested by means of the Behrens-Fisher "d" Test[5] and reference made to Sukhatme's Tables of Significance of the Difference Between 2 Means. The formula used to calculate "d" was:

$$d = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{\Sigma(X_1 - X_2)^2}{N(N_1 - 1)} + \frac{\Sigma(X_1 - X_2)^2}{(N_2(N_2 - 1)}}}$$

The derived value of "d" was accepted as indicating a significant difference between 2 means being tested if the value was at or less than the .05 level.

The Pearson Product Moment method[6] was used to determine coefficients of correlation between all possible pairs of dependent and independent variables. The correlations provided evidence on factors to control for greater validity in matching. The formula used was as follows:

$$r_{ij} = \frac{N\Sigma X_i X_j - \Sigma X_j \Sigma X_j}{\sqrt{[N\Sigma X_i^2 - (\Sigma X_i)^2]\,[N\Sigma X_j^2 - (\Sigma X_j)^2]}}$$

where Xi represented scores for variable one, Xj represented scores for variable 2.

Hypotheses 3 and 4 were subjected to further testing by use of Multiple Regression[7] analysis as follows:

(a) Normal Education (Beta Coefficient)

$$\frac{(\hat{Y} - \bar{y})}{Sy} - \frac{B_i(X_i - \bar{X}_i)}{Si} + - - - + Bt\frac{(X_t - \bar{X}t)}{St}$$

where $(\hat{y} - y)$ = the deviation from the mean of the dependent variable and $(Xi - \bar{X}i) + - (X + - \bar{X}i)$ = the deviation from the mean of the independent variables.

(b) The Coefficient of Determination (R^2)

$$R^2 = \frac{\Sigma(y - \bar{y})^2}{\Sigma(y - \bar{y})^2}$$

or Multiple Correlation Coefficient (R)

$$= \sqrt{\frac{\Sigma(\hat{y} - y)^2}{\Sigma(y - \bar{y})^2}}$$

The test of significance of each Beta Weight was achieved by the following formula:[8]

$$\frac{{}^tBi - Bi}{{}^s\overline{Bi}}$$

where:

Bi = the particular Beta Weight
${}^sBi$ = the standard deviation of Bi
${}^tBi$ = the calculated value of "t" of the Bi

(The "t" value was compared with the "t" value distribution value at the .05 level. If the calculated "t" value exceeded the "t" distribution value, the Beta Weight was considered significantly different from zero.)

The test of significance of the obtained value of R was done by using the variance ratio with reference to F tables.

$$F \text{ (variance ratio)} = \frac{R^2}{M}\frac{(N\text{-}M\text{-}1)}{(1\text{-}R^2)}$$

where R^2 was the Coefficient of Determination, N is the total number of independent variables.

Hypotheses 3,4,5,6, and 7 involved more than 2 groups and, therefore, entailed the use of Analysis of Variance to determine the difference among different groups of means. The resulting difference was described as an "F" value and was computed as follows:

[5] Palmer O. Johnson *Statistical Methods in Research*, Prentice-Hall Inc., New York, 1949, pp. 71-75.

[6] Helen M. Walker, *Elementary Statistical Methods*, New York, Henry Holt and Company, 1943, p. 222.

[7] Obtained from a procedure outlined by the staff of Numerical Analysis Laboratory, University of Wisconsin, Madison, Wisconsin.

[8] Palmer O. Johnson, *op. cit.*, p. 338-339.

$$F = \frac{\text{Between MS}}{\text{Within MS}} = \frac{\frac{\Sigma\Sigma X^2}{(g\text{-}1)}}{\frac{\Sigma\Sigma X^2}{(N\text{-}g)}}$$

where:

X = Mean score for each subject in each variable

g = Number of groups

N = Total number of subjects in all groups

The derived value of F was accepted as statistically significant if the value represents a signficant difference at the .05 level. If the F value was found to be significant for a given variable, each pair of means for the groups concerned was subjected to a further test to determine the confidence interval between the pairs of means. This test, known as Tukey's "W" was computed by the following formula:

$$\text{"W"} \quad q^{\phi}(\text{d.f.}_b,\ \text{d.f.w})S\bar{X}$$

$q^{\phi}(\text{d.f.}_b, \text{d.f.w})$ = Tukey's value for significance = within sum of squares

$^{S}X = \frac{\text{w. ms}}{\text{n}}$ divided by "n" — (The number of girls in each group)

For Hypotheses 5, 7, and 11 a one-way classification of Analysis of Variance was used as determined by using Scheffé's [9] Error Term. This variation on the Analysis of Variance was necessitated by the nature of the study sample which involved unequal numbers in each cell.

The error mean square suggested by Scheffé:

$$E = \frac{K.S}{\text{d.f.}}$$

$$\text{Where } K = \frac{i}{N}\sum_{i=1}^{N}\frac{1}{Ni}$$

$$S = \sum_{i=1}^{N}\sum_{j=1}^{Ni}(X_{ij} - X_{i.})^2$$

$$\text{d.f} = \sum_{i=1}^{N}(Ni - 1)$$

Those variables which produced F values significant at the .05 level were subjected to a further test to determine the mean scores between which there was a significant difference. This test is known as Duncan's Multiple Range Test [10] and was devised for those study samples which involve unequal numbers in each cell.

The formula used was as follows:

$$\bar{X}_1 - \bar{X}_2 > \left(\sqrt{\tfrac{1}{2}\left(\frac{1}{n_1} + \frac{1}{n_2}\right) S^2}\right) Zp,\ n2$$

where:

s^2 = the error mean square for each variable

p = the number of means concerned

n_2 = the degrees of freedom for the error mean square

z p, n_2 = a variable depending on the position in Duncan's Table of Significant Studentized ranges for a .05 level.

[9] H. Scheffé, *The Analysis of Variance*, 1959, John Wiley and Sons, p. 362.

[10] Clyde Young Kramer, *"Extension of Multiple Range Tests to Group Means with Unequal Numbers of Replications," Biometrics*, XII, September 1956, pp. 307-310.